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**SSERC Risk Assessment** (revised version March 2018)

(based on HSE’s INDG 163 ‘Risk assessment - A brief guide to controlling risks in the workplace’)

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| Activity assessed | Cannon Fire |
| *Date of assessment* | October 2016 |
| *Date of review (****Step 5****)* |  |
| *School* |  |
| *Department* |  |

| Step 1 | Step 2 | Step 3 | Step 4 |
| --- | --- | --- | --- |
| *List Significant hazards here:* | *Who might be harmed and how?* | *What are you already doing?**What further action is needed?* | *Actions* |
| *by whom?* | *Due date* | *Done* |
| Decomposition products of KMnO4 are harmful. | Demonstrator by inhalation | Carry out demonstration in well-ventilated room. Avoid inhalation of vapour so far as is possible. |  |  |  |
| Ethanol is highly flammable | Demonstrator – ‘explosions’ can cause spillage. | Do not add more KMnO4 at a time than recommended.Do not use any more concentrated solution of hydrogen peroxide.Do not use larger quantities than recommended. |  |  |  |
| 100 vol Hydrogen peroxide is corrosive and an oxidiser | Technicians preparing dilute solution by splashes | Keep away from any combustible materials. Avoid splashing. Wear goggles (EN 166 3) and gloves. |  |  |  |
| 20 vol hydrogen peroxide is an irritant | Demonstrator by spillage | Stand back while demonstration is happening. Wear eye protection. |  |  |  |

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| **Description of activity:**30 cm3 of 20-volume hydrogen peroxide is mixed with 20 cm3 ethanol in a large evaporating basin. The ethanol is lit with a splint. A small amount (0.5 g or so) of potassium manganate(VII) is sprinkled into the burning ethanol. The KMnO4 decomposes to release oxygen and this increases the rate of burning of the ethanol, this will be accompanied by the sound of a series of loud, but harmless, detonations. |

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| **Additional comments:**Very little, if any, smoke is produced in this demonstration but it should nonetheless not be carried out directly underneath a smoke detector. |